The results of a recent national health and nutrition survey in Japan have indicated that people aged 40 and over have a higher tendency to contract metabolic syndrome or show signs of contracting the condition. Physical activity is known to be useful for improvement of metabolic syndrome. In this study, we investigated whether habitual physical activity and diet are related to body mass index (BMI) and blood biochemical parameters, and identified the factors of habits connected with metabolic syndrome.

We surveyed 454 men and 1703 women aged between 40 and 59, all residents of Ichikawa city (a suburb of Tokyo). We received data from their annual public medical check-ups, and assessed their habitual physical activity and diet with a self-administrated questionnaire. Based on the results of the questionnaire, we estimated a physical activity score (Pscore) and a dietary habits score (Dscore). The Pscore was grouped into three classes (<10, 10-<19, >19). The component of physical activities (Pcomp) was based on 14 questionnaire items on physical activity. These questionnaire items were categorized into two components by principal component analysis. Then, these components were each assigned a score, and classified into four groups; inactivity, daily activity, sporting activity, and vigorous activity.

According to the results of the Kruskal Wallis test, there were significant differences in both BMI and triglycerides (TG) levels among the three classes of Pscores. As well, there were significant differences in both BMI and TG levels among the four groups of Pcomps. As indicated by the high levels in the Pscores and Pcomps, people with a more active lifestyle maintain normal levels of BMI and TG.

Logistic regression analyses were used to examine the risks of overweight, hypertriglyceridemia and hyperglycemia associated with gender, Pscore and Dscore. Overweight and hypertriglyceridemia were associated with gender and Pscore. The odds ratios of Pscore on overweight and hypertriglyceridemia were 0.64(0.53-0.79) and 0.95(0.92-0.97), respectively. Hyperglycemia was associated with gender and Dscore. The odds ratio of Dscore on hyperglycemia was 0.68(0.55-0.83).

We conclude that the characterizations of subjects with high risk of metabolic syndrome (overweight, hypertriglyceridemia and hyperglycemia) are gender (male), inactivity and unbalanced diet. Pscore obtained from our questionnaire may be useful for evaluation of physical activity levels in Japanese lifestyle.

Keywords: Metabolic Syndrome, Diet, Physical Activity